Technical Note on QALY- based Wellbeing Valuation

Context

Wellbeing can be defined as 'the way people feel and how they function, both on a personal and a social level, and how they evaluate their lives as a whole'[1] The literature does not coalesce around a single definition of wellbeing, but there is a degree of consensus that it is made up of three elements: emotional (happiness), social (the inter-relationship with others) and mental health.

For some time, societal return on investment valuers have been seeking to place a monetised figure on the way people feel about their lives as a result of how they experience an intervention. This might be a new built environment project, a social intervention policy, or changes in their personal or working life.

Changes of this nature are subjective and do not easily translate to conventional transactional cost benefit methods. Stated and revealed preference techniques have been criticised for being inaccurate and not directly correlated to the way people feel about themselves in relation to the intervention. Life-satisfaction type methods such as the wellbeing valuation proxies developed by HACT are based on personal questions about how people feel about their lives, but they are not specific to the intervention, and also tend to produce high amounts of value compared to cost benefit-based estimates for the same impacts.

Equating wellbeing with mental health is another approach which relies on healthcare economics to produce the proxy values needed to conduct a societal return on investment analysis. This may be the most meaningful method by which to gauge how a person feels about their life at the time of questioning and can be linked directly to an intervention. This method has the potential to be the most effective way to value changes in wellbeing because it links the causes of change with the accounts of how stakeholders react to the intervention

This Technical Note explains the rationale behind this new approach, and then sets out the step-by-step process by which the methodology can be applied in the field. The Note makes it clear that the methodology is now being used by RealWorth and others on active projects and has the potential to be modified in the future pending analysis of the results.

What are QALYs

QALYs stand for Quality Adjusted Life Years which refers to gains in health. Specifically, a QALY is 'a measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. QALYs are calculated by estimating the years of life remaining for a patient following a particular treatment or intervention and weighting each year with a quality-of-life score (on a 0 to 1 scale). It is often measured in terms of the person's ability to carry out the activities of daily life and being free from pain and mental disturbance [often based on survey questions]'[2]. There are several approaches to placing monetary value on a QALY including cost-effectiveness thresholds, stated preference, and meta-analysis[3].

One year of perfect health equals one QALY. One year of less than perfect health has a quality of life (sometimes referred to as utility value) between 0–1. Death has a utility value of 0, while perfect health (as a result of an intervention) would be scored as 1. QALYs are calculated simply

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[1] NEF, 2012. Measuring wellbeing: A guide for practitioners. Available at http://www.neweconomics.org/publications/measuring-wellbeingp.8).
[2] NICE Glossary https://www.nice.org.uk/glossary?letter=q
[3] ENVOY Partnership https://envoypartnership.com/quality-adjusted-life-years-qalys-in-social-return-on-investment-sroi/

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by multiplying the duration of time spent in a health state by the weighting or coefficient number (in QALY terms this can be referred to as a utility score) between 0 and 1 as stated by the respondents. Often a QALY is compiled from the answers given by multiple respondents to ensure a statistically significant weight for the intervention.

Figure 1: Graphic to illustrate how to calculate a QALY
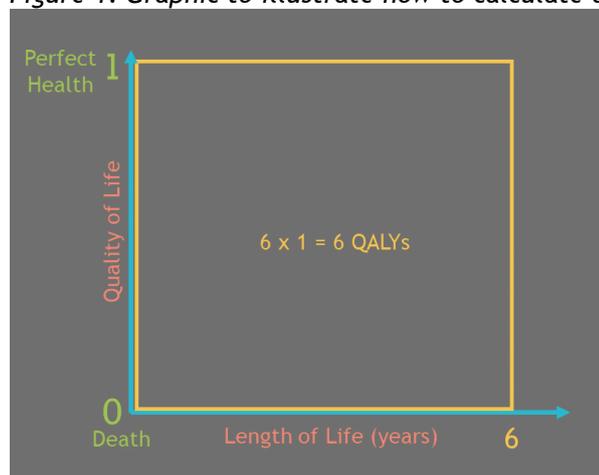
After University of Sheffield

Using QALYs to Generate Wellbeing Proxies

The method involves a 5-step approach. The steps are:

- Step 1: Calculating the price of a QALY
- Step 2: Finding the coefficients
- Step 3: Calculating the generic proxy value for wellbeing
- Step 4: Establishing wellbeing sub-factors
- Step 5: Establishing weighting for the wellbeing subfactors

Step 1: Calculating the Price of a QALY – The Price of Perfect Health

A standard cost for a QALY needs to be established in order to find the monetary value that should be used to calculate the wellbeing proxy. To do this it was necessary to go to the literature, and specifically to those research studies that sought to establish a monetary value for being in an improved state of health. A sifting process was carried out to find the studies that covered people reporting on general health, as opposed to specific diseases or circumstances.

This narrowed the search to 7 studies which are listed in Table 1. In each study the respondents were asked to put a value on a QALY (a full year in good health). The average of the 7 studies was calculated to be £28,561 at the time of writing. This exercise should be repeated on an annual basis to ensure the figure is updated using the latest studies in this field.

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Table 1: Monetary Values of QALYs

	Study	Monetary Value of QALY (£)
1	EuroVAQ- European Value of a QALY	£36,930
2	'Willingness to pay for a QALY- the individual perspective'	£26,453
3	'Life satisfaction, QALYs, and the monetary value of health'	£31,320
4	'Methods for the estimation of the NICE effectiveness threshold'	£20,817
5	'Willingness to Pay for a Quality-Adjusted Life Year: Implications for societal health care resource allocation'	£25,292
6	'A Willingness to pay (WTP) per Quality-adjusted life year (QALY) in Denmark'	£15,702
7	'WTP for a QALY and health states: more money for severer health states?'	£43,416
	AVERAGE	**£28,561**

Step 2: Finding the Mental Health Coefficient

The derivation of the coefficient for poor mental health is drawn from 'The Economic and Social Costs of Mental Illness' published by the Sainsbury Centre for Mental Health (SCMH), June 2003. Patients suffering with mental health were asked about five dimensions of their health status based on a questionnaire (EQ-5D). This covers mobility; self-care; ability to perform usual activities; pain/discomfort; and anxiety/depression on a scale of 0-1. The respondents were then asked to rate themselves on each of the five dimensions as either having no problems (level 1), some problems (level 2) and severe problems (level 3). The SCMH study used the H*ealth Survey for England 1996* as the main data source for the responses. The 1996 version was chosen because in that year members of the sample were asked to provide information on a number of general measures of health status.

The study calculated coefficients for severe mental health (Type 3) and moderate mental health (Type 2). The figure for severe mental health was 0.352 of a QALY, and moderate mental health was 0.098 of a QALY.

Step 3: Calculating the Generic Proxy Value for Wellbeing

Having established that the value for a QALY is £28,561 (Step 1) and the coefficient for severe and moderate mental health problems are 0.352 and 0.098 respectively (Step 2), it is possible to calculate the generic proxy value for wellbeing. These are:

- 0.352 x £28,561 = **£10,053 per QALY** *(Type 3 or severe)*
- 0.098 x £28,561 = **£2,799 per QALY** *(Type 2 or moderate)*

The question of which coefficient to apply on a case-by-case basis can be determined in one of two ways. The social value analyst could attempt to divide the target population affected by the intervention according to the statistical likelihood of being severely or moderately affected by mental health problems. Alternatively, the Type 3 figure can be taken as a default that marks the top of the scale for the value of changes to wellbeing in any stakeholder. The former leads to some difficulties in deciding which of the stakeholders (Type 2 or Type 3 people) are likely to experience outcomes for any given intervention. It is therefore simpler to take the absolute case of a Type 3 stakeholder and apply adjustments through a method such as the WEMWBS scale (via

survey returns) which asked respondents to rate the extent of the change they experienced on a 1-10 scale. This would make sure that outcomes are not overclaimed.

Step 4: Establishing a Standard Set of Wellbeing Sub Factors

The figures established in Step 3 would suffice if there was just a single wellbeing factor that people experienced as a result of an intervention. However, this is likely to be too crude to represent the range of feelings produced by an intervention. Wellbeing is complex and is distributed across feelings of emotion (happiness), socialisation (relationships with others) and mental health. The approach adopted here assumes that it would be better and more accurate to measure a number of different stated changes to peoples' lives than to try to sum up the overall change to their feelings of wellbeing.

In order to represent these different aspects of wellbeing, it is necessary to identify a range of feelings that might be influenced by an intervention. Following a review of the stated outcomes from previous RealWorth projects (as carried out since 2011) a list of 10 wellbeing outcomes has been adopted (see Table 2). Reference to physical and mental health have been omitted from this list because the QALY is based on the value of health states. To place value on specific references to health would be to risk double counting the influence of this on people's lives.

Table 2: Common wellbeing sub-factors

	Wellbeing Subfactor	Outcomes	Explanation
1	**Feeling part of the Community**	A) People feel that they have the potential to influence change in their local area	
		B) People feel they are respected and are pleased with the way they are treated by others in the community	
		C) People are aware that assistance and support is available and close at hand in the locality	
		D) People know how and where to go to take part in the local decision-making process	
		E) People have good relations with those that live around them	
2	**Feeling Satisfied at Work**	A) People are satisfied with their employment situation	

		B) People gain satisfaction from moving from worklessness to employment	
3	**Maintaining Good Levels of Self-Esteem**	A) People have higher levels of self-confidence	Wellbeing associated with improvements in the way people view their potential for agency (acting for themselves)
		B) People gain new or improved social skills	
4	**Concerns About Money Are Not Significant**	A) People ease concerns about their personal finances	Wellbeing associated with financial circumstances that promote good levels of wellbeing
		B) People understand that their income is enough to be able to afford what they need to buy and to manage debt commitments	
		C) People are confident that the money they can save will be enough to cover unforeseen events	
		D) Having sufficient income to be able to pay for adequate accommodation	
5	**Enjoying Good and Close Family Relationships**	A) People have supportive family relationships	Wellbeing from the security of having a supportive family
		B) People are able to stay with relatives in difficult times	
6	**Leading an Active Social Life**	A) People have regular social interactions with other people	Wellbeing from attending communal events and organised meetings such as clubs, associations, societies, etc. that either avoids loneliness and isolation or promotes feelings of engagement and belonging
		B) People feel that they can attend meetings organised in the locality	
		C) People living on their own feel they can mix with others if they want to socialise	
7	**Achieving goals by working with others**	A) People benefit from choosing to volunteer to help with local initiatives	Wellbeing from being actively involved with planning and

		B) People can easily become a member of a working group, task force, community initiative etc.	delivering a project for the common good
8	**Benefitting from Learning Opportunities**	A) People benefit from training at work	Wellbeing from gaining knowledge that improves feelings of worth or ability to solve problems
		B) People have a rewarding experience during an apprenticeship or training scheme	
		C) People gain from attending adult learning or evening classes	
		D) People gain from attending occasional or one-off courses, workshops, masterclasses etc.	
		E) People benefit form learning new skills	
9	**Being Unconcerned About Crime**	A) People feel that a threat to their personal safety or property is unlikely	Wellbeing from feelings of safely
		B) People are confident that loved ones are not likely to be victims of crime	
		C) People are proud that they live in a local area that is safe	
10	**Proud of the Conditions in the Local Area**	People consider that live in clean conditions (regular litter and refuse collection, street cleansing, recycling etc.	Wellbeing from green, blue, or restorative parks, squares, gardens etc. that offer respite from environmental that can impact on physical or mental health
		People are proud that local buildings and public areas are well maintained	
		People know that there are local natural and open spaces that provide quiet or recreational opportunities	
		People are appreciative of cultural and art-based features of the neighbourhood	

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Step 5: Establishing Weightings for the Wellbeing Sub-Factors

If each of the sub-factors were considered as having equal importance to stakeholders, then the QALY proxy values should be divided equally between the 10 sub-factors. Table 3 shows the values that would result from this calculation for each sub-factor.

Table 3: Equally Weighted Proxy Values for Type 2 and 3 Mental Health QALY

	Wellbeing Subfactor	Weighting (%)	Monetary Value for a Type 3 QALY (£) *	Monetary Value for a Type 2 QALY (£) °
1	Feeling Part of the Community	10.0 %	£1,005.30	£279.90
2	Feeling Satisfied at Work	10.0 %	£1,005.30	£279.90
3	Maintaining Good Levels of Self-Esteem	10.0 %	£1,005.30	£279.90
4	Being Unconcerned About Money	10.0 %	£1,005.30	£279.90
5	Enjoying Good and Close Family Relationships	10.0 %	£1,005.30	£279.90
6	Pursuing an Active Social Life	10.0 %	£1,005.30	£279.90
7	Achieving Goals by Working with Others	10.0 %	£1,005.30	£279.90
8	Benefitting from Learning Opportunities	10.0 %	£1,005.30	£279.90
9	Being Unconcerned About Crime	10.0 %	£1,005.30	£279.90
10	Proud of the Conditions in the Local Area	10.0 %	£1,005.30	£279.90
	TOTAL	100%	£10,053	£2,799

* £10,053 (proxy for the wellbeing factor QALY *(Type 3)* ÷ the 10 sub-factors = £1,005.30

° £2,799 (proxy for the wellbeing factor QALY (Type 2) ÷ the 10 sub-factors = £279.90

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However, it is unlikely that respondents would weight each of the sub-factors in the same way. Some may feel that personal safety is more important than health, while others may rank socialising with people living in the community as more important than their relationship with members of their family. Taking a straight equal weighting across the ten sub-factors would remove stakeholders from the process, therefore creating further separation between proxy values and the SVUK/SVI principle to 'involve stakeholders'. A method of weighting should therefore consider the actual contributions from individuals.

There are several potential ways to determine the weighting of sub-factors. The most obvious is to survey the preferences of the stakeholders associated with projects on a case-by-case basis. While this would link the cohort with a localised set of preferences, there are reasons why the method may not be reliable. The sample size may be too small, or the survey conditions may not allow sufficient time to ask about wellbeing preferences. In some situations, it may not be possible to interview or survey stakeholders at all. There is also a wider argument that would suggest that this could be unhelpful for comparative studies between projects even if it is possible to produce a survey that contains a representative amount of returns. New weightings for every project would mean that different projects, and even the same project over time (longitudinal studies) could not be compared.

An alternative, default approach for establishing weighting would be to use survey returns from multiple built environment projects. The data set would need to be sufficiently large, and the questions would need to focus on the wellbeing subfactors (or could be interpreted as such) for this to be relevant. The subject of the survey (the nature and type of project in this case) would also need to be similar to the subject of the assessment. The local response to the intervention would be maintained by the selection of the wellbeing outcomes that stem from the survey responses.

RealWorth has been able to obtain a data set that conforms to these criteria and proposed to use this as the basis for standard weightings for the 10 wellbeing sub-factors. Commonplace, the stakeholder engagement company, has offered a data set comprising some 12,588 survey responses collected from 13 built environment projects. The projects ranged in size from a single development (such as a shopping centre or housing estate) to policy sets affecting entire city regions. They concerned issues such as regeneration plans, climate assemblies, spatial development strategies, landlord licensing schemes and transport schemes. RealWorth assigned keywords to each of the 10 potential wellbeing sub-factors and searched the survey returns for these words. Key word counts were taken exclusively from open-ended questions with free text answers.

There were 113 search tags across the ten sub-factors, and these were manually filtered for relevance to the sub-factor. The total count for each sub-factor was then summed up and a percentage created using the frequency of declaration against total tags counted. This percentage weighting was then used to find the monetary value of each sub-factor towards a Type 3 and Type 2 QALY for mental health (as shown in Table 4).

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Table 4: Weighted Proxy Values for Type 3 and Type 2 Mental Health QALYs Based on Commonplace Data Set

	Wellbeing Subfactor	Weighting (%)	Monetary Value for a Type 3 Mental Health Condition (£) *	Monetary Value for a Type 2 Mental Health Condition (£) °
1	Feeling Part of the Community	13.89%	£1,395.93	£388.66
2	Feeling Satisfied at Work	12.35%	£1,241.73	£345.73
3	Maintaining Good Levels of Self Esteem	1.56%	£156.53	£43.58
4	Being Unconcerned about Money	6.38%	£641.31	£178.56
5	Enjoying Good Family Relationships	8.49%	£853.91	£237.75
6	Pursuing an Active Social Life	5.97%	£600.42	£167.17
7	Achieving Goals by Working Together	1.78%	£178.73	£49.76
8	Benefitting from Learning Opportunities	8.10%	£814.19	£226.69
9	Being Unconcerned about Crime	10.46%	£1,051.32	£292.71
10	Proud of the Conditions in the Local Area	31.02%	£3,118.93	£868.39
	Total	**100.00%**	**£10,053**	**£2,799**

* The proxy for a QALY *(Type 3)*

° The proxy for a QALY *(Type 2)*

The Table shows that 'Proud of the Conditions in the Local Area' was the most frequent issue raised by the respondents from the set from the 10 chosen by RealWorth, while 'Maintaining Good Levels of Self Esteem' and 'Achieving Goals by Working Together' were the least raised issues. It may be the case that the nature of the case studies could have had the effect of inflating or supressing the answers given by the respondents, and hence had some influence on the weightings given to some of the subfactors in this Note. The intention is to adopt the current weightings and use then in field. Further survey data will be collected asking how respondents would rank each of the 10 sub-factors in terms of the importance of the sub-factors on their lives. These results will be used to modify the initial weighting if this is considered to be necessary.

Conclusions

While any method that seeks to monetise wellbeing will present several problematic issues, a QALY-based approach offers both transparency and a more obvious link (health) to the way stakeholders feel about their lives compared to other methods. The Draft British Standard 8950 also emphasises the need for methods that tie stakeholders into the social value process. It also underpins many of the 7 Principles of Social Return on Investment, particular 'involve stakeholders, value things that matter, and do not over-claim. QALY-based wellbeing allows the social valuer to be intervention specific instead of relying on generic database sources and is like to produce values that are in proportion to other cost-benefit derived calculations.

This method will be applied to a range of projects over the next 12 months and the results will then be compared to other ways of assessing the value of wellbeing. A survey of the 10 wellbeing sub-factors will be carried out during this period, and the results of this will be used to evaluate the current weightings. Changes to the weighting will be made at this time if the stakeholder returns suggest these should be amended.

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May 2020